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Montana Science Grade 8  
Sample Multiple-Choice Items

PHYSICAL SCIENCE

1. The table below shows properties of four different substances.

Property	Substance 1	Substance 2	Substance 3	Substance 4
State of Matter	solid	solid	solid	liquid
Attracted to Magnet	yes	no	no	yes
Dissolves in Water	yes	no	yes	no
Color	white	white	white	silver

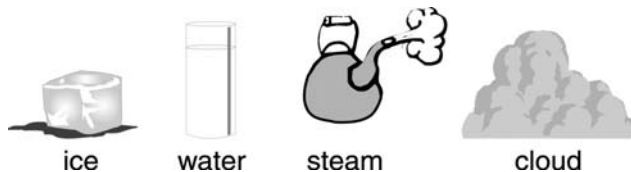
Which substance could be sugar?

- A. Substance 1
- B. Substance 2
- C. Substance 3
- D. Substance 4

2. Burt is going to stir soup that is cooking on the stove. He wants to use a spoon that will stay the coolest when he stirs the soup. Which spoon would be the **best** for him to use?

- A. an iron spoon
- B. a wooden spoon
- C. an aluminum spoon
- D. a silver spoon

3. The pictures below show water in several forms.



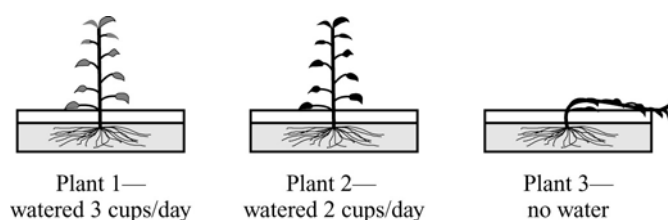
In which form are the water molecules moving the **most** rapidly?

- A. ice cube
- B. glass of water
- C. steam from pot
- D. a cloud

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Sample Items**

**LIFE SCIENCE**

4. What is the function of chloroplasts?
- A. making food in plant cells
  - B. helping cells reproduce
  - C. allowing materials to enter cells
  - D. providing support in animal cells
5. A student designed the experiment shown below to determine the best amount of water to give a particular kind of plant.



- How should the experiment be changed to provide the **best** scientific information?
- A. All plants should receive more direct sunlight.
  - B. All plants should be given the same amount of water.
  - C. Use three different kinds of plants rather than three of the same kind of plant.
  - D. Use three of the same kind of plant receiving each of the different amounts of water.
6. Which list contains major parts of the respiratory system?
- A. gall bladder, large intestine, stomach
  - B. brain, spinal cord, nerves
  - C. arteries, heart, veins
  - D. diaphragm, lungs, trachea

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**EARTH SCIENCE**

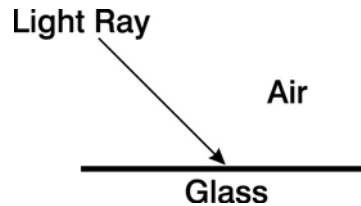
7. If the number of trees significantly decreased, the level of which gas in the atmosphere might increase?
- A. carbon dioxide
  - B. hydrogen
  - C. nitrogen
  - D. oxygen
8. Which technology is **most** responsible for the progress made in predicting and tracking hurricanes since 1960?
- A. onshore weather stations
  - B. weather satellites
  - C. weather videotapes
  - D. improved barometers
9. Which process does **not** need to occur for water to cycle through the environment?
- A. water condensing
  - B. energy being transferred from the Sun
  - C. water evaporating
  - D. oxygen being dissolved in water

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**Sample Constructed-Response Item**

**PHYSICAL SCIENCE**

10. A light ray travels through air until it hits the surface of a piece of glass, as shown in the diagram below.



- a. Draw **two** diagrams. In each diagram, show one thing that could happen to the ray of light after it hits the glass surface.
- b. For each of your diagrams, describe one way people make use of the fact that light behaves the way your diagram shows.

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Sample Items**

**Answer Key**

1. C
2. B
3. C
4. A
5. D
6. D
7. A
8. B
9. D

10. Sample Answers – Other answers may also be acceptable.

- a. Three things can happen to the ray of light:
  - it can reflect from the surface with the angle of incidence being equal to the angle of reflection;
  - it can refract as it is transmitted through the surface with the ray bending toward the perpendicular (normal) to the surface;
  - it can be absorbed at the surface and become heat within the glass.
- b. Three ways people make use of the properties of light:
  - Reflection is used to create images in flat mirrors, to focus light with curved mirrors, and many other uses;
  - Refraction is used to correct sight with glasses, to magnify images, to separate colors (prisms) and many other uses;
  - Absorption is used when it is important to keep warm, such as wearing black or dark colored materials on a